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ABSTRACT

This pamphlet presents a description of two interrelated Swedish research projects both of which studied the effects of preschool programs on young children. The first project, a traditional preschool curriculum, is examined in terms of Weikart's scheme for preschool curriculum models. The evaluation procedure involved a comparison of 130 preschool children with 130 children who had no preschool experiences. A broad range of measurement instruments were employed; results are given in terms of physical, motor, social-emotional, interests and activities, knowledge and achievement, school readiness, and school achievement variables. The second research study describes and evaluates a new preschool curriculum. The characteristics of this experimental program are illustrated in an excerpt from the teacher's handbook. The evaluation procedure involved a comparison of 438 children from 24 experimental program groups with 451 children from traditional preschools. Comparison variables include observations and tests of social behavior, social adjustment, social knowledge, concepts, vocabulary, school readiness, Grade 1 achievement, attitudes toward preschool, and attitudes toward school start. (SDH)

Pre-School Education in Europe

L'Enseignement Pré-Scolaire en Europe

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Research on Pre-School Programs in Sweden

K-G. STUKÅT, Göteborg

Introduction

Research on early childhood has undergone a noticeable shift in emphasis during the last decade. From having been dominated by developmental description and analysis, research on young children is now devoting increasing attention to environmental factors which influence development. This change in emphasis has run parallel with the progress of a more optimistic view of the nurture-nature relationship. The maturity model of Gesell has been challenged by Bruner, Hunt and other advocates of a more learning oriented approach.

One expression of the current interest in the effects of environment on the child's mental growth is the development and evaluation of numerous new experimental preschool programs. Most of these activities have taken place in USA and have often been related to compensatory education for socially deprived children. But there are beginning efforts in the same direction in Europe. The author is at present gathering material for a European trend report on preschool research. A general observation is that innovative preschool programs are being developed in most European countries. Evaluation of the new programs is ordinarily included in the plans although as yet completed only for some of the programs.

In this article will be presented two interrelated Swedish research projects which have both studied preschool effects. In the first of them existing ("traditional") preschool has been evaluated by comparing preschool children with children without preschool experience, and in the second study the effects of an experimental program were compared with those of an ordinary kindergarten program.

Study I. Evaluation of Existing Pre-School

Pre-School Curriculum

School begins at seven in Sweden. About 70% of the age group six and smaller proportions of younger age groups attend preschool. (Government has recently proposed that preschool should be made available to all six year-olds and that younger children with special needs should be actively searched out for preschool training.) There are two main kinds of preschools, the whole day nursery ("day-home" for ages 1/2-6) and the part day preschool ("kindergarten" for ages 4-6). Both types have the same pedagogical program, but in addition to its educational tasks the dayhome is also responsible for general care of the child during the whole day.

Preschool goals are broad in scope, related to whole personality development rather than to the training of narrow functions. They include physical, motor, intellectual and social-emotional aspects. Preschool goals are not as explicitly stated as the objectives of a school curriculum, but by using various sources, such as curriculum guide lines, commission reports, and interviews with preschool teachers, the author[1] has summarized the most agreed upon goals in the following list:

Physical: health, hygienic habits;
Motor: gross motor control, manual dexterity, rhythm;

Intellectual:
creative, constructive and aesthetic interests, general social and science orientation, vocabulary, language expression and comprehension, moral concepts, school readiness;

Social-emotional:
routine habits, social adjustment (respect for rules, consideration for other people's interests, trustful attitude to other children and to adults, independence), emotional adjustment (self-reliance, frankness, frustration tolerance, absence of nervous disturbances such as anxiety, inhibitions, psychosomatic symtoms, lack of concentration).

Swedish preschool curriculum has been Froebel influenced for a long time, but impulses have also come from many other quarters. Reform pedagogues such as Montessori and Decroly, the Vienna school, American and English nursery schools, have all made their contributions to the present curriculum, in which free play, social activities, creativily stimulation and work on interest topics are characteristic features. There is also a clear influence from developmental psychology with its dictum that educational measures must always be taken with due consideration to the child's maturity level. "Developmental psychology, not learning psychology should be the base for everything you do with preschool children"[2]. The most concrete expression of this view is the fact that school activities (and by this is mainly understood training in the three R:s) are principally avoided in preschool.

Observations have shown that the curriculum is rather homogenous in various preschools. As a rule, a week plan is followed. The program is modified dependent on weather, occasional events, etc., but certain recurring elements give a regular rhythm to the preschool day. Thus the first hour is usually devoted to free play or optional activity, e.g. drawing, modelling, handicraft or doll play. This is followed by "gathering" with discussion, story telling, singing, and acting. The topic for discussion is often about some current interest area, such as Christmas, traffic, food or being ill. The sitwork is now and then interrupted by motion and rhythm games. During the rest of the preschool period the children are busy with their projects, individually or in groups. Frequent study trips belong to the typical preschool program.

In order to characterize the existing Swedish preschool program in more general terms, reference will be made to Weikart's[3] diagram of preschool curricula models. Each of the program types in this organizational scheme is related to the ways teachers and children interact. Of key importance is the role division between teacher and child. Who's predominant role is to initiate action, who's role to respond? (Fig. 1)

The model gives four "pure" types of program (and various combinations of them). One of them, custodial care, is hopefully outdated and will not be

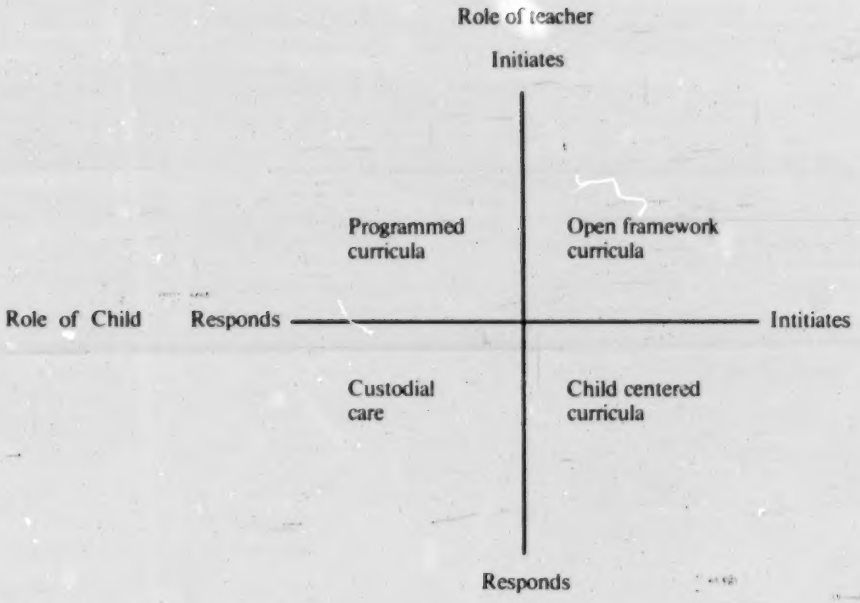


Fig. 1:
Weikart's scheme for preschool curriculum models.

commented on. The programmed type is characterized by teacher initiative and pupil response. The curricula are directed at clearly defined objectives, most often reading, writing, and arithmetic skills. (These programs are sometimes called "academic" or "preacademic" programs.) The curriculum is highly structured and the emphasis on convergent thinking. The programs often rely on special equipment and rigidly defined instructional procedures. Theoretically these curricula have their background in reinforcement learning theory. Practically they belong to the field of educational technology. Among the more well-known programs of this kind can be mentioned those developed by Bereiter-Engelmann (Distar) and Glaser-Resnick (Primary Education).

Open framework curricula are in most cases based on Piaget's theories. They are usually cognitively oriented but focus on underlying processes of thinking and cognition rather than on narrow skills. Curriculum framework is structured so that the teacher has clear guidelines for how to use the physical environment, arrange experiments and sequence material. But at the same time it is up to the teacher to judge the needs of the child and to plan activities according to these judgments. The teacher acknowledges and accepts the child's capacity to discover, reason, and recognize relationships. The role of initiative is mutual, and the interaction pattern is that of dialogue. Examples of programs using this approach are Karnes' Ameliorative Program and Weikart's Cognitively Oriented Program.

Child-centered curricula have their focus on the development of the whole child, with emphasis on social and emotional growth. They are characterized by open and free environments and by a permissive relationship between

teacher and child and among the children themselves. Activities are centered on the children's interests and on things that are socially useful for them. Fantasy play and role playing as well as creative and aesthetic expression are characteristic features. The teacher responds to the child's initiatives in an understanding and supporting manner. The theory implicit in child-centered curricula (but seldom explicitly formulated) is one of belief in spontanous development and sensitive response to the child's needs. The goals are broad and reflect prominent values in the society: independence, creativity, self-discipline, emotional harmony, and positive social relationships. Most existing preschool programs in Western Europe and USA have no doubt most of their essential features in common with the child-centered curriculum as described here. As can easily be seen from a comparison with the characterization given previously this is true also for the traditional Swedish preschool curriculum.

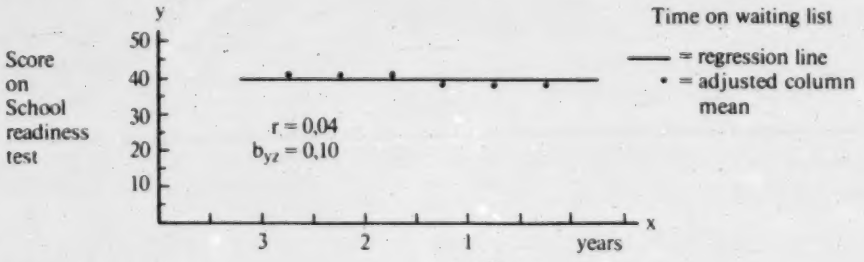
Evaluation Procedure

The effects of the preschool program were evaluated by comparing 130 children who had attended part day preschool 1-3 years with 130 "home" children on a number of variables. The evaluation took place when the children were in Grade 1. In addition a follow-up study with fewer variables was performed two years later in Grade 3.

Since the comparison groups could not be regarded as a random sample from a common population various control procedures were necessary to quarantee equivalence. A first step was to choose all control subjects from the large pool of children who had been on the waiting list for preschool but for whom there had not been room. Thus both comparison groups consisted of children for whom their parents had applied for admission. The time for application was, however, different. A second control was made by studying the regression on application time of each of the dependent evaluation variables within the control group. An example of such an analysis is shown in Fig. 2.

None of the regression lines reflected any relationship between time of application and scores on the evaluation variables. Since, however, this con-

Fig. 2:
Relation between time for preschool application and results on the Schoolreadiness test for the control (home) group.



Evaluation Variables		Grade 1	Grade 3
Physical	Weight	0	
	Height	0	
	Infections during preschool	(+)	
	Infections after preschool	(-)	
Motor	Lincoln-Oseretsky	0	
	Rhythm test	0	
Social emotional	Daily life tasks	+	
	Adjustment in home	0	
	Adjustment in school	0	
	Extraversion	(+)	
	Sociometric status	0	
	Observations: activity	0	
	Observations: group play	0	
	Observations: organized play	0	
	Frustration: extrapunitivity	(+)	
	Frustration: intropunitivity	0	
	Suggestibility	0	
	Nervous symptoms	0	
Interests and activities	General motor activity	(-)	
	Manual-constructive play	+	
	Role playing	0	
	Intellectual games	0	
Knowledge and achievement	General knowledge	+	0
	Vocabulary	(+)	
	Language use: coherence	+	
	Language use: stereotypes	0	
	Language use: creativity	(+)	
	Language use: correctness	+	
	Moral concepts (Piaget)	0	
	Painting: form level	0	
	Painting: colour	(+)	
	Painting: originality	(+)	
School readiness and school achievement	School readiness test	0	0
	Reading	0	0
	Spelling	0	0
	Arithmetic	0	0
	Teacher rating of school achievement	(+)	0

Table 1
Comparisons between preschool children and control children. A plus sign means a significant difference in favour of the preschool group. Within parenthesis the sign means a marked tendency which may reflect a real difference. A zero sign stands for no difference.

trol could only be made ex post facto, it was judged necessary to match the comparison groups on several variables: sex, age, father's occupation, living area and number of siblings. In addition, after controls were made on some background factors: educational level of parents, age of siblings, and home facilities.

A criterion for the choice of evaluation variables was that they should satisfactorily cover the preschool objectives listed earlier. For this purpose it was necessary to use a broad range of measuring instruments: tests, inventories, observations, and interviews. All tests in Grade 1 were presented individually. The evaluation variables are listed in Table 1.

Results

For the sake of simplicity the results are presented without much detail in Table 1. The reader who is interested in more specified information is referred to the complete research report (1).

It can be seen that preschool has had positive effects in some respects: general orientation knowledge, vocabulary, verbal expression, daily-life routines, and manual-constructive tasks. Common to these variables seems to be that they represent rather well defined skills which are given a good deal of attention in preschool. On the other hand, for variables related to more intangible objectives, such as social-emotional adjustment and mental health, no clear effects were observed. Somewhat paradoxically, the results suggest that preschool which is programmatically non-teaching, achieves its most evident effects in areas where some kind of teaching actually takes place. The results may be interpreted in terms of "specificity of effects", a concept that has been used for explaining certain positive but differential effects of "programmed" compared with "open framework" preschool curricula in recent evaluations of compensatory programs. The absence of effects on school achievement can be given a similar interpretation, since these results do not reflect substantial transfer from the general intellectual stimulation in preschool to skills in the elementary school subjects.

Interaction with length of preschool attendence was found only in one instance, viz. for "daily-life routines". The children tended to perform better in this regard the longer they had stayed in preschool.

Study II. Development and Evaluation of an Experimental Program

Drawing on the experiences gained in the first study as well as on the rapidly accumulating research information from other sources, a new preschool curriculum was developed and tested in a field experiment. The project took place 1968-72 in Göteborg under the auspices of the National Board of Education and its bureau for research and development. A more detailed report of the project than can be presented here is given by Stukát & Sverud[4].

Characteristics of the Program

Only part of a total preschool program was covered by the project. The areas chosen were the same as those given particular attention by the Swedish Preschool Commission[5], viz. social, concept, and communication development.

Compared with a usual curriculum guide, the objectives were spelled out more concretely. To take an example, in social training some of the subgoal areas were:

respect for rules and norms;
understanding the value of self and others;
cooperation;
tolerance of deviance.

Each of these was illustrated by concrete desriptions such as (for the, first item in the list):

follow rules in a game situation;
distinguish between "good" and "bad" rules;
formulate own rules.

The ambition was not to be exhaustive on the concrete level in the curriculum guide. Rather the examples served the purpose to provide the teacher with redundant illustrations of how the more global goals can - and should - be transformed into concrete action in everyday situations.

Another feature of the new program was that the learning stimulation role of preschool was taken seriously. It did not mean that the school curriculum was moved down into preschool or that school subjects were taught. But in relation to the preschool goals - most of which are important prerequisites of later school progress - teaching was regarded as a legitimate enterprise. The teacher's role was defined as one of active educational intervention and not limited to vaguely defined "stimulation" or "enrichment".

On a continuum describing the degree of "structure" of a preschool curriculum, the experimental program can most adequately be located towards the structured end, but moderately so. The teachers were guided by a booklet which stated objectives, recommended sequences, afforded method examples and made references to materials that had been developed for the program. At the same time the teacher was encouraged to take own initiatives and always to adapt activities and tasks to the individual child's interests, needs and capacity.

The teacher-pupil interaction pattern supposed by the program can best be characterized as dialogue. In terms of Flanders' well-known interaction model the teacher's verbal behaviour is expected to be "indirect" (accepting, supporting, using pupil ideas, asking questions) rather than "direct" (correcting, critizing, directing, lecturing).

If looked upon within the frame of reference given by Weikart's scheme, it can be seen that the Göteborg program has most of its features in common with an open framework curriculum. But this general description needs some qualification. For one thing, goal descriptions are propably more concrete than in most open framework curricula. Our program is somewhat more like the programmed curricula in this respect, although it represents a more open system and has broader goals than is typical of such programs. Another thing to observe is that our program is not predominantly intellectual in its orientation as are most open framework curricula. (These programs are sometimes called "cognitive" programs.) In the Göteborg program as much attention is given to social development as to cognitive. As a matter of fact, one of the basic ideas behind the program is a disbelief in one of the popular rationales that seems to underlie preschool arrangement, namely that good social development will take place if only the children are together in groups.

Our assumption is that group activity is a necessary but not sufficient condition for desirable social development. Social attitudes and behaviours are acquired by learning as cognitive skills are learnt. It is necessary to supplement incidental social learning by arranging the environment in such ways that it becomes natural and rewarding for the child to be helpful, generous and cooperative.

Method Example

In order to illustrate the typical procedure of the program a (digested) excerpt from the teacher's handbook will be presented. The example, is taken from concept training in the goal area of "classification".

The objective is that the child will learn to group objects according to their common properties and to name these characteristics. More concretely, the child is expected to answer questions such as:

- Which objects belong together?
- Are there similarities (differences) between these objects?
- What properties (form, colour, etc) has this object?
- Which of these objects are blue (square, heavy, etc)?

Use natural situations to stimulate the children's interest in object characteristics. Let them tell about things around them: pencil, rubber, chalk. They will probably talk most about how the objects are used. Make remarks like:

- Yes, it is right that we can draw with the pencil. What makes that possible?
- It is white.
- Has the chalk any other properties?
- It is long (round, smooth).
- What other objects do you know that are white (long, round)?

Accept proposals generously. Don't stop very long at any characteristic or object but rather return to it when there is a natural occasion.

When the children have become familiar with naming characteristics, the activities can be varied. "Guess objects" is one variety. One child keeps an object behind its back and describes its properties. ("It is thin, long, red and sharp".) Other children guess what the object might be. The game is well suited for small groups of children. Instead of real things, imagination can be used ("What am I thinking about? It is small..").

Another variant is the "Property game". The teacher (or a child) shows an object and the children describe its properties. After having named a characteristic the child stands up and after a while there may be quite number of "property representatives". Each one repeats "his" property and counting may be tried.

The introductory games described so far demand no special material; things available in the room can be used. Before presenting more complicated grouping tasks with natural objects, specially designed material is useful, e.g. "Logical blocks". They represent different shapes, colours, size and thickness, and are designed in such a way that each block differs from the rest in at least one property. Let the children first explore the material and discuss their discoveries in small groups. The teacher's role should be limited to stimulation, for instance by suggesting interesting grouping possi-

bilities. Later attention is drawn to more structured problems. The children are asked to place the blocks in heaps which have something in common. Ask questions:

- What property have all the blocks in this heap?
- Can they be arranged in some other way?
- What property have the blocks in the new heap?

The Logical blocks are also available as pictures which can be used for playing cards. The children try to get as many pairs of common properties as possible. "I would like to have a red square card." The game with its frequent discussions - or disputes - gives sample opportunities for the children to analyze concepts and to use appropriate words for them.

When the children have been familiar with properties that appear in pure and "ideal" form, time has come to let them confront situations which present more complicated grouping problems. The transition should be made successively. Start with objects which have rather clear properties such as buttons, coins, blocks. "Thing hunting" is a game that opens the door to the rich manifoldness of the environment. The children "go hunting" for objects: twigs, stones, feathers. When back to school they sort them according to properties: smooth-rough, soft-hard, brown-grey-green. They tell their fellows how they have sorted. Several children can then make common groupings and regroupings. By comparing different groupings the children discover that some property names are relative. "Large" or "small"? "Short" or "long"? "Heavy" or "light"? It depends upon what one compares with. Other properties have a more constant meaning. A red object remains red in different contexts, and so does a round thing. But when working with their material the children observe that there might be problems in these cases, too. There are things which are not red and not yellow but something in between. Some child probably solves the problem by pointing out that there is a word for that special colour, "orange". Discussions around such relativity and borderline questions make clear important concept problems for the children. They find that the properties of one and the same object can be conceived differently, but also that it is possible to reach agreement about how a particular property should be defined and named.

As the material grows, exhibitions can be arranged with the children acting as guides telling about the properties of their object groups. Such simple qualities as "small-big" or "soft-hard" are now trivial for many children and they excel in more sophisticated concepts like "matt-shiny" or even "flexible-rigid". By encouraging the children to try different groupings they grow observant to the fact that an object can be characterized by many properties and that one's knowledge of an object is greater the more of its properties one knows.

Not only objects from the natural environment but also human and social phenomena should be used for classification training. Realistic pictures of people can e.g. be grouped on the basis of sex, age, size, or hair colour. When the children discover the possibility to cross tabulate, there will be natural opportunities to discuss observations related to important social issues, e.g. that people who belong to the same group are still different and that members of different groups are like each other in many respects. Prejudices such as "men are tall and strong, women are small and weak" are thus confronted with concrete experience.

It should be evident from the method example described above that there are no sharp limits between concept training and the other areas: commu-

nication and social training. As far as possible integrative activities, using the same material for different purposes, have been encouraged.

Another comment to the example is that a diagnostic check list belongs to the classification part of the program by which the teacher gets information about the progress of individual pupils and their educational needs.

Field Evaluation

The experimental program was tested in a one-year field experiment. Twenty four preschool groups with together 438 children followed the program. The teachers attended a three-days planning conference during which rationales, methods, and materials were introduced. Each teacher was then visited every fortnight by a project staff member for discussion of experiences and problems. On these occasions plans for the next two weeks were also made up and new materials and methods commented on. In addition a number of common meetings took place during the experimental year.

The 24 experimental groups were compared in different respects with 24 control groups of 451 preschool children who participated in ordinary preschool programs. Both experimental and control preschools were of part-day type. Since randomization of the children was not feasible, a quasi-experimental design had to be used. The experimental groups came from two suburban industrial communities and the control groups from two other suburban communities of about the same size and economic structure. Although not a randomization experiment the evaluation study had several of the "plus factors"[6] which increases the validity of a non-random design:

pre-and post-test were identical;
pretests were performed before the experimental treatment;
the experimental factor was controlled;
statistical methods (analysis of covariance) were used for equivalization;
the distribution of subjects on experiment and control groups can be assumed to be relatively unsystematic.

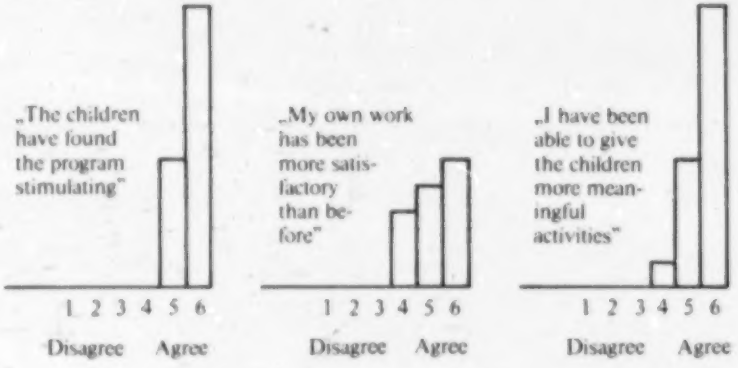
The experimental and control teachers were compared in age, length of service, attitudes to the teaching profession and attitudes to structured preschool activities. The attitude measurements were performed at the beginning of the experimental period. There appeared no significant differences or marked tendencies in these teacher characteristics. In an additional variable, attitudes to different teacher roles measured by the Teacher Preference Scale, the experimental teachers rated "nurturant" and "nondirective" roles significantly higher but "orderly" and "dominant" roles lower than the control teachers.

Both groups were measured on a number of variables representing the different goal areas before and immediately after the experimental period. In addition, at the end of the year observations were made of the interaction pattern between teacher and children using Flanders' method for interaction analysis. A follow-up study on a limited number of variables was performed after one year when the children were finishing Grade 1. The results from the comparisons are summarized in Table 3. Differences between adjusted post-test scores were tested for significance by analysis of covariance, using pretest scores as covariates.

Variable	End of experimental year	End of Grade 1
Observation of social behaviour (cooperation dominance, aggressivity, dependence, responsibility)	0	
Ratings of social adjustment		-
Test of social knowledge	+	
Concept test 1	+	
Concept test 2		0
Vocabulary	+	
School readiness test	+	
Achievement test for Grade 1		0
Attitudes to preschool	+	
Attitudes to school start	0	
Observations of interaction pattern	+ (higher I/D ratio in exp group)	

Table 3
Comparisons between experimental group (N=438) and control group (N=451). A plus sign means significantly higher score for the experimental group. A minus sign means significantly higher score for the control group. A zero sign means no difference.

Fig. 3:
Teacher attitudes to the experimental program. N=16. (Some of the teachers had two part day groups.)


„The children have found the program stimulating"
1 2 3 4 5 6
Disagree Agree
„My own work has been more satisfactory than before"
1 2 3 4 5 6
Disagree Agree
„I have been able to give the children more meaningful activities"
1 2 3 4 5 6
Disagree Agree

Significant differences in favour of the experimental program are found at the end of the experimental year for social knowledge (but not for observed social behaviour), concepts, vocabulary and school readiness test. The general picture is that the positive effects appear mainly in the cognitive area but not in social behaviour. The results from the follow-up do not indicate permanence of the cognitive effects. The higher I/D ratio in the experimental groups reflects a more indirect or dialogue styled interaction between teacher and children in these groups. This can be an effect of the experimental program but may also be related to the more nondirective attitudes among the experimental teachers. There is a possible link between the more indirect teaching pattern in the experimental group and the lower ratings of social adjustment for this group in Grade 1. The lower ratings might reflect a conflict between the interaction pattern that the children have been accustomed to in the experimental program and acceptable interaction roles in school.

The positive attitudes to preschool of the experimental children have their counterpart in generally favourable reactions to the experimental program among the teachers as shown in Fig. 3. When interviewed the teachers particularly stressed their satisfaction with the learning orientation of the experimental program and the more clearly defined professional teacher role.

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